CIF 23-6: Rapid Composting of Crop Space Waste

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Activity Type: New Start

Primary STMD Taxonomy: TX06.1.3 Waste Management

Starting TRL: 2 **End TRL:** 3

Executive Summary: This project processed multiple types of waste simulant feedstocks using commercial composting units and NASA Trash-to-Gas (TtG) technology processing units to see what solids, liquids, and gases could be recovered. The feedstock waste included inedible biomass, mission waste from the Johnson Space Center (JSC) Crew Health and Performance Exploration Analog (CHAPEA), Mars analog, and the long duration Orbital Syngas/Commodity Augmentation Reactor (OSCAR) Waste Simulant (OWS) and OSCAR Full Scale (FS) (also referred to as Mars 850-day mission waste simulant). The performance data was collected, and overall performance of the waste processing systems, as well as elemental analysis of the product yields for enabling Lunar and Martian regolith mixtures in a crop grow-out study, were performed. Germination took place in certain Lunar and Martian regolith studies, with promising preliminary results that TtG solid products can be used as plant nutrients to enable crop growth in off-world regolith simulants.